



**REGION 11
CHICAGO EMS SYSTEM
PROCEDURE**

Title: 12 Lead Electrocardiogram (ECG) - ALS

Section: Cardiac Management

Approved: EMS Medical Directors Consortium

Effective: May 17, 2021

12-LEAD ELECTROCARDIOGRAM (ECG) - ALS

INDICATIONS

- All patients with suspected **Acute Coronary Syndrome (ACS)** should have an ECG performed in the prehospital setting
- At a minimum, patients with any of the following signs or symptoms should have a 12-lead ECG performed:
 - Chest pain
 - Symptomatic heart failure
 - Pulmonary edema
 - Shortness of breath
 - Syncope or presyncope
 - Return of spontaneous circulation (ROSC) after cardiac arrest
 - Tachycardia (> 120 bpm) or bradycardia (< 50 bpm)
 - Any of the following atypical symptoms of ACS in patients over age 40 (atypical symptoms of ACS are especially common in women, diabetics and the elderly):
 - Generalized weakness
 - Epigastric pain or nausea/vomiting
 - Diaphoresis
 - Shoulder/arm/jaw pain
 - Atraumatic hypotension

EQUIPMENT

- Cardiac electrodes
- Limb lead and precordial lead attachment to main cable
- Cardiac monitor/defibrillator with 12-lead ECG capability

PROCEDURE

1. Apply personal protective equipment.
2. Perform patient assessment and identify patients requiring an ECG based on above criteria.
3. Insert limb lead and precordial lead attachment into main cable.
4. Insert cable connector into cardiac monitor.
5. If necessary, clean and dry skin or remove excess chest hair with razor.
6. Apply electrodes to limbs and precordial lead sites.



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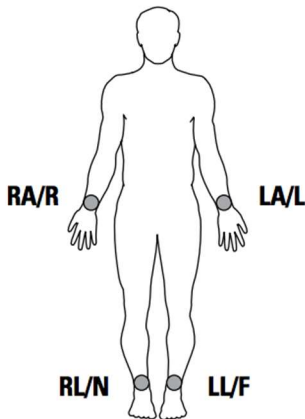
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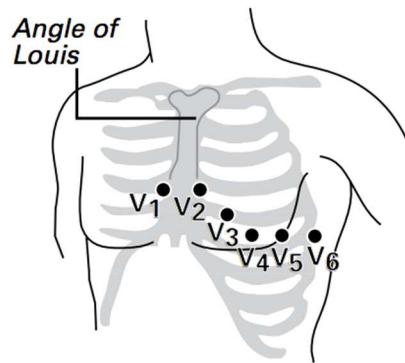
7. Encourage patient to remain still during 12-lead ECG acquisition.
8. Press "12-LEAD" button and enter identifying information (ambulance number and patient initials).
9. Review 12-lead ECG and interpretation.
10. Transmit ECG to receiving hospital.
11. Repeat and transmit ECG after:
 - Any change in patient status;
 - Any change in cardiac rhythm; or
 - Administration of any electrical or medical therapies.
12. For patients with very high suspicion for Acute Coronary Syndrome and an initial ECG that does not show STEMI, leave ECG cables in place for continuous ST segment monitoring/repeat ECG.
13. Attach ECG to the electronic patient care report (ePCR).

CARDIAC LEAD PLACEMENT:

Limb Lead Electrode Sites



Precordial Lead Electrode Sites



AHA Labels

RA Right Arm
LA Left Arm
RL Right Leg
LL Left Leg

IEC Labels

R Right
L Left
N Negative
F Foot

V1 C1 Fourth intercostal space to the right of the sternum
V2 C2 Fourth intercostal space to the left of the sternum
V3 C3 Directly between leads V2/C2 and V4/C4
V4 C4 Fifth intercostal space at midclavicular line
V5 C5 Level with V4/C4 at left anterior axillary line
V6 C6 Level with V5/C5 at left midaxillary line